5780_Prelab_07

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1 : What is the basic difference between an open and closed-loop control system?

- **Open-loop systems** apply a process or algorithm to directly generate their output state from their inputs; they have no method of measuring the actual effect of their actions.
- Closed-loop control systems use their own output as a secondary input, and calculate a course of action depending on the error between the desired and current state.

The difference between the two is feedback. Closed systems have it. Open ones don't.
In other words, the output of a closed systems depends on both its current state and the inputs whereas the output in an open system only depends on the inputs.

2 : What does the acronym "PID" stand for?

The acronym PID represents the three mathematical relations used within the control system; and stand for **proportional, integral, and derivative**.

Each of these aspect stand on their own as a simple control system. PID sums them up to make a better one.

3 : When does proportional control lose effectiveness?

Proportional control provides rapid correction when the error signal is large, but loses effectiveness as the plant output nears the setpoint (**i.e. It loses effectiveness for small error**). Additionally, proportional control has the limitation that can not not adjust if the error persists through the initial action.

4 : Did you watch the intro videos?

Yes and they were helpful to understand the concepts better. In particular, summarizing PID as present, past, and future was helpful. So was the explanation of winding up.